CHAPTER 2

DESCRIPTION OF THE CLEAR FORK OF THE CUMBERLAND RIVER WATERSHED

2.1. BACKGROUND. The Clear Fork of the Cumberland River and Watershed are named for the clear spring-fed headwaters that form Clear Fork in a narrow limestone gorge in Kentucky. Clear Fork of the Cumberland River flows into Kentucky (where most of the watershed landmass is located) and is often confused with Clear Fork, a popular boating destination located entirely in Tennessee (and, with New River, forms the South Fork Cumberland River).

This Chapter describes the location and characteristics of the Clear Fork of the Cumberland River Watershed.

2.2. DESCRIPTION OF THE WATERSHED.

2.2.A. General Location. The Tennessee portion of the Clear Fork of the Cumberland River Watershed is located in East Tennessee and includes parts of Campbell, Claiborne, and Scott Counties.

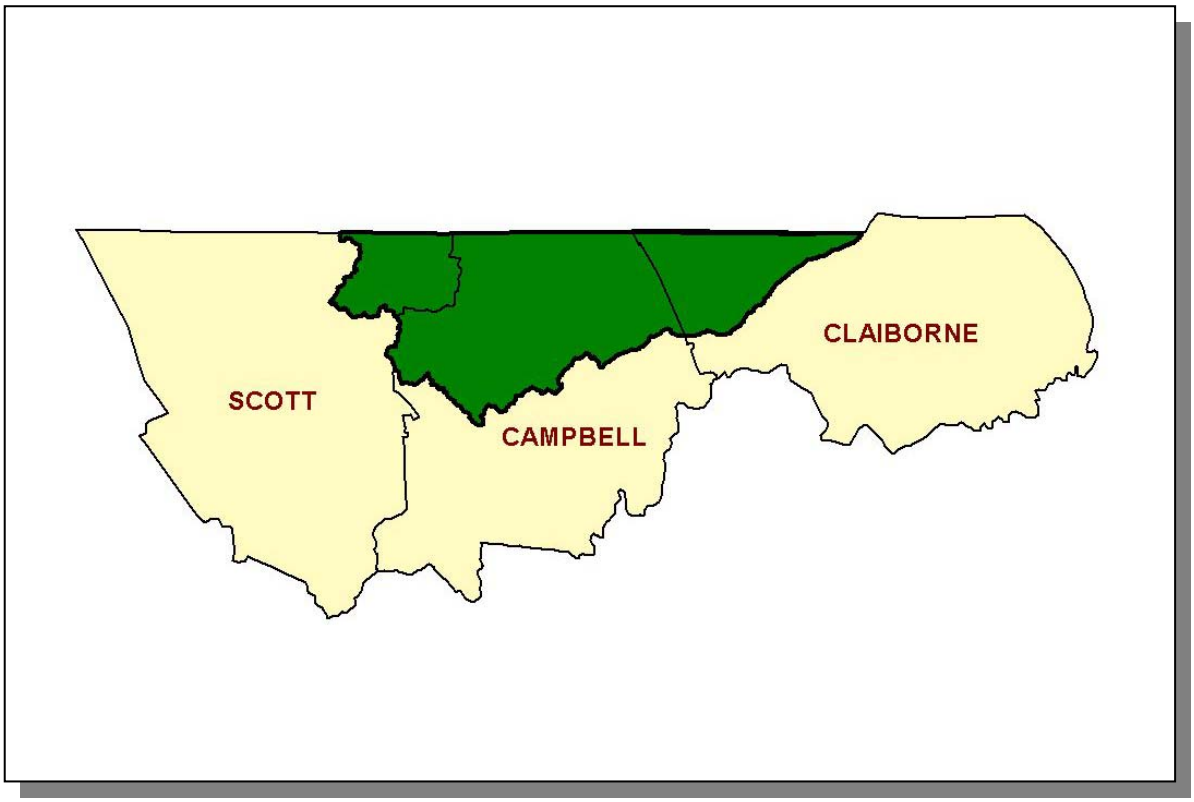

Figure 2-1. General Location of the Tennessee Portion of the Clear Fork of the Cumberland River Watershed.

COUNTY	% OF WATERSHED IN EACH COUNTY
Campbell	62.1
Claiborne	22.6
Scott	15.3

Table 2-1. The Clear Fork of the Cumberland River Watershed Includes Parts of Three East Tennessee Counties.

2.2.B. Population Density Centers. Four highways serve the major communities in the Tennessee portion of the Clear Fork of the Cumberland River Watershed.

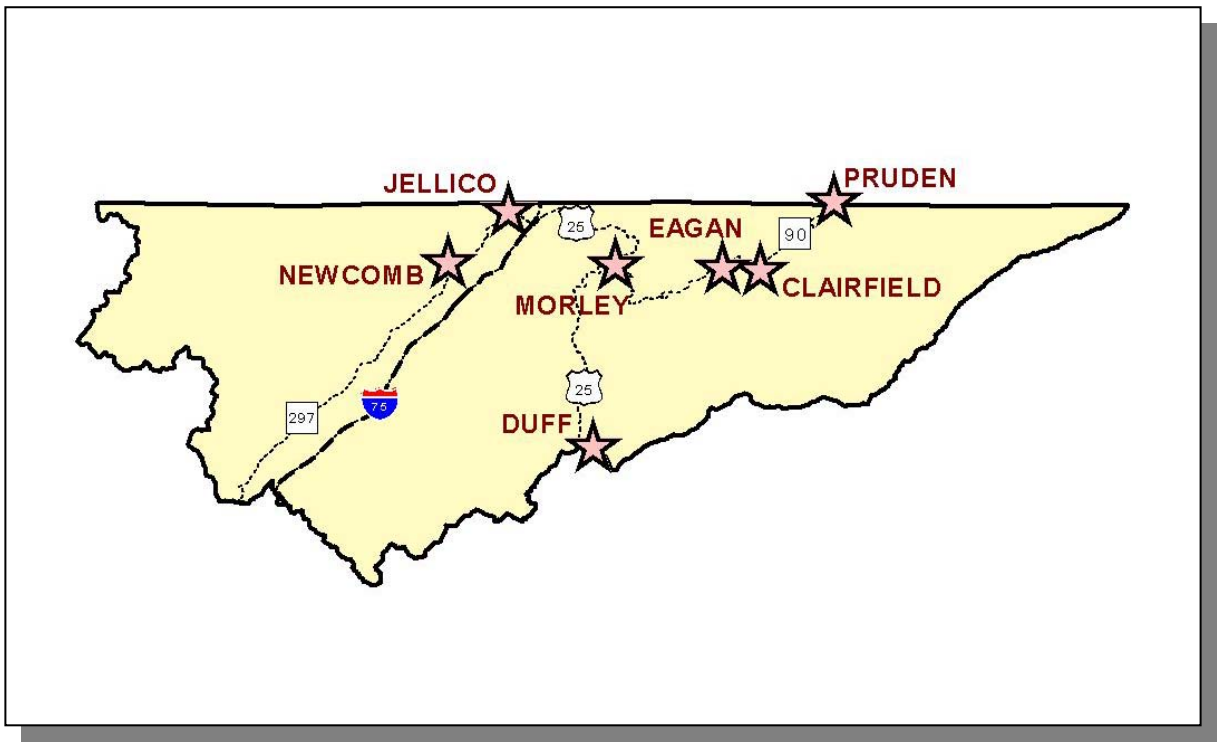

Figure 2-2. Communities and Roads in the Tennessee Portion of the Clear Fork of the Cumberland River Watershed.

MUNICIPALITY	POPULATION	COUNTY
Jellico	2,448	Campbell

Table 2-2. Municipalities in the Tennessee Portion of the Clear Fork of the Cumberland River Watershed. *Population based on 2000 census (Tennessee Blue Book) or http://www.hometownlocator.com.*

2.3. GENERAL HYDROLOGIC DESCRIPTION.

2.3.A. Hydrology. The Clear Fork of the Cumberland River Watershed, designated 05130101 by the USGS, is approximately 2,282 square miles (329 square miles in Tennessee) and drains to the Cumberland River.

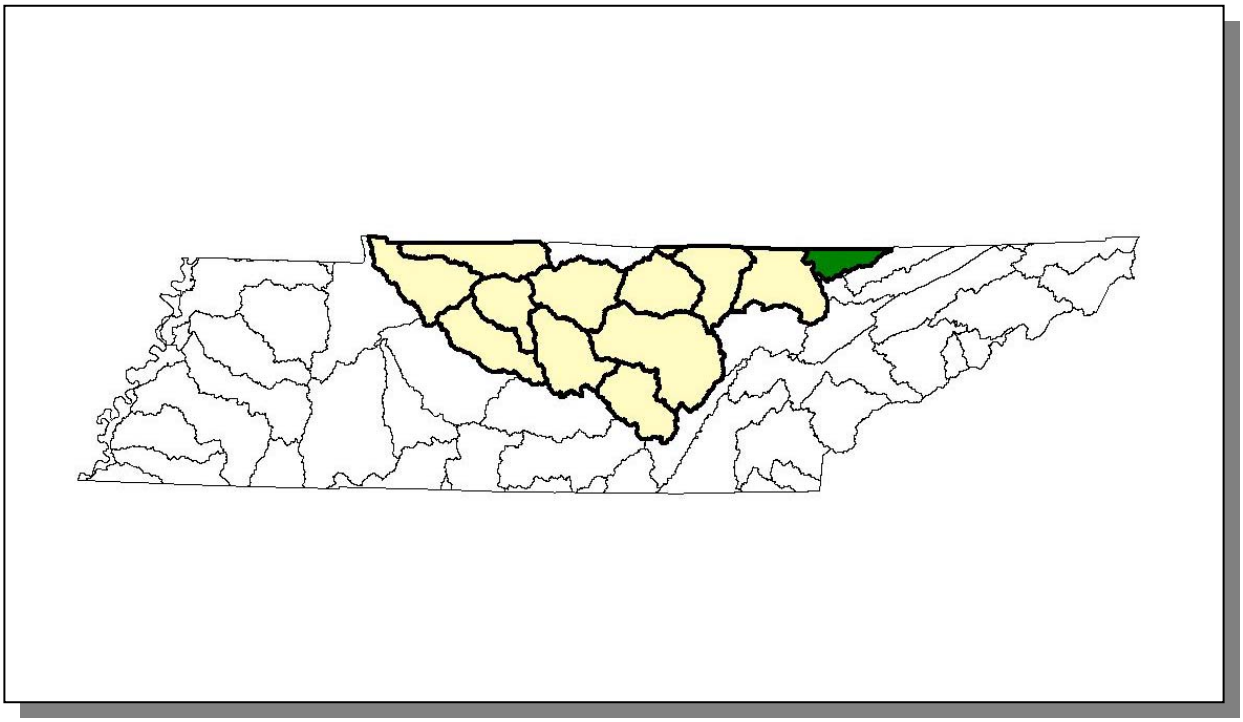

Figure 2-3. The Clear Fork of the Cumberland River Watershed is Part of the Cumberland River Basin.

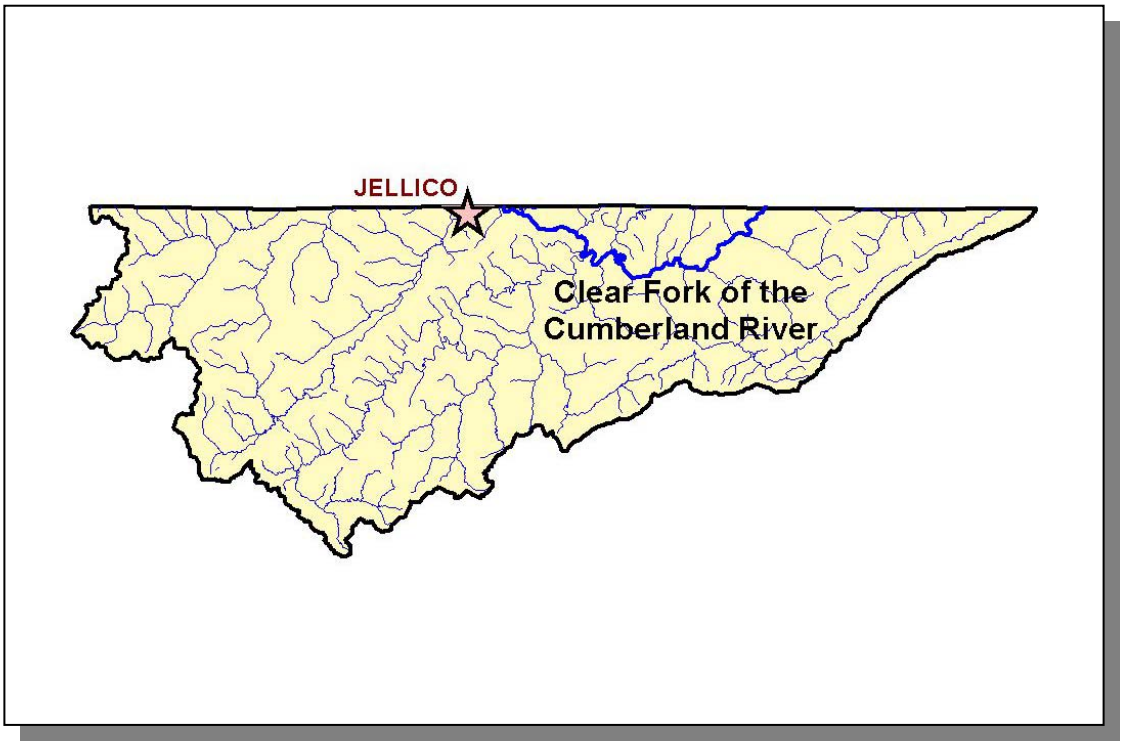

Figure 2-4. Hydrology in the Tennessee Portion of the Clear Fork of the Cumberland River Watershed. *There are 442.6 stream miles recorded in River Reach File 3 in the Tennessee portion of the Clear Fork of the Cumberland River Watershed. Locations of the Clear Fork of the Cumberland River and Jellico are shown for reference.*

2.3.B. Dams. There are 2 dams inventoried by TDEC Division of Water Supply in the Tennessee portion of the Clear Fork of the Cumberland River Watershed. These dams either retain 30 acre-feet of water or have structures at least 20 feet high.

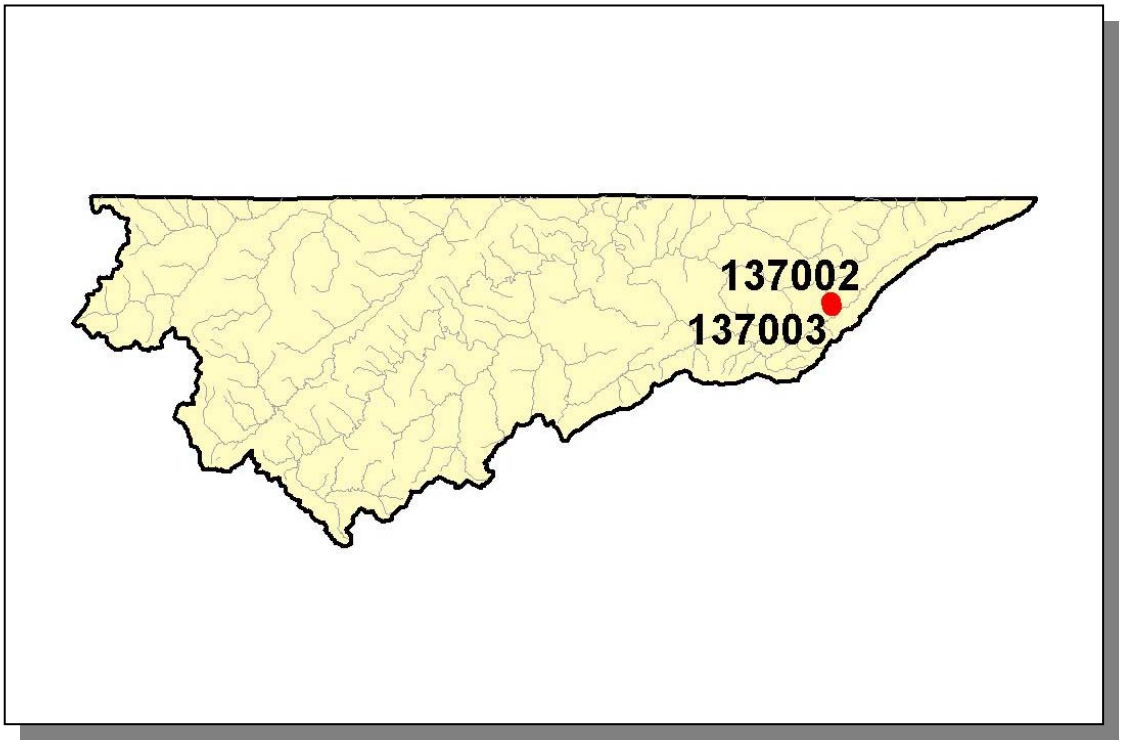

Figure 2-5. Location of Inventoried Dams in the Tennessee Portion of the Clear Fork of the Cumberland River Watershed. *More information is provided in Appendix II and at http://gwidc.memphis.edu/website/dws/.*

2.4. LAND USE. Land Use/Land Cover information was provided by EPA Region 4 and was interpreted from 1992 Multi-Resolution Land Cover (MRLC) satellite imagery.

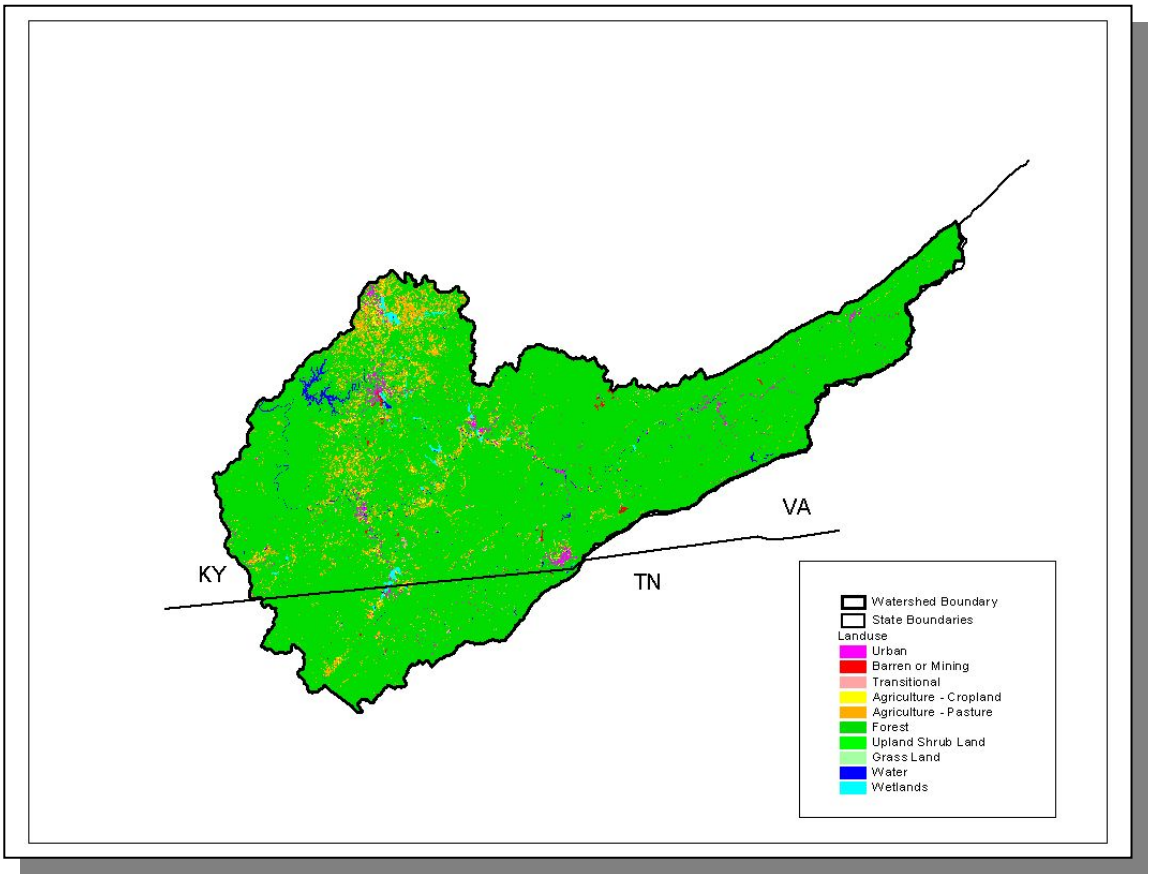

Figure 2-6. Illustration of Select Land Cover/Land Use Data from MRLC Satellite Imagery.

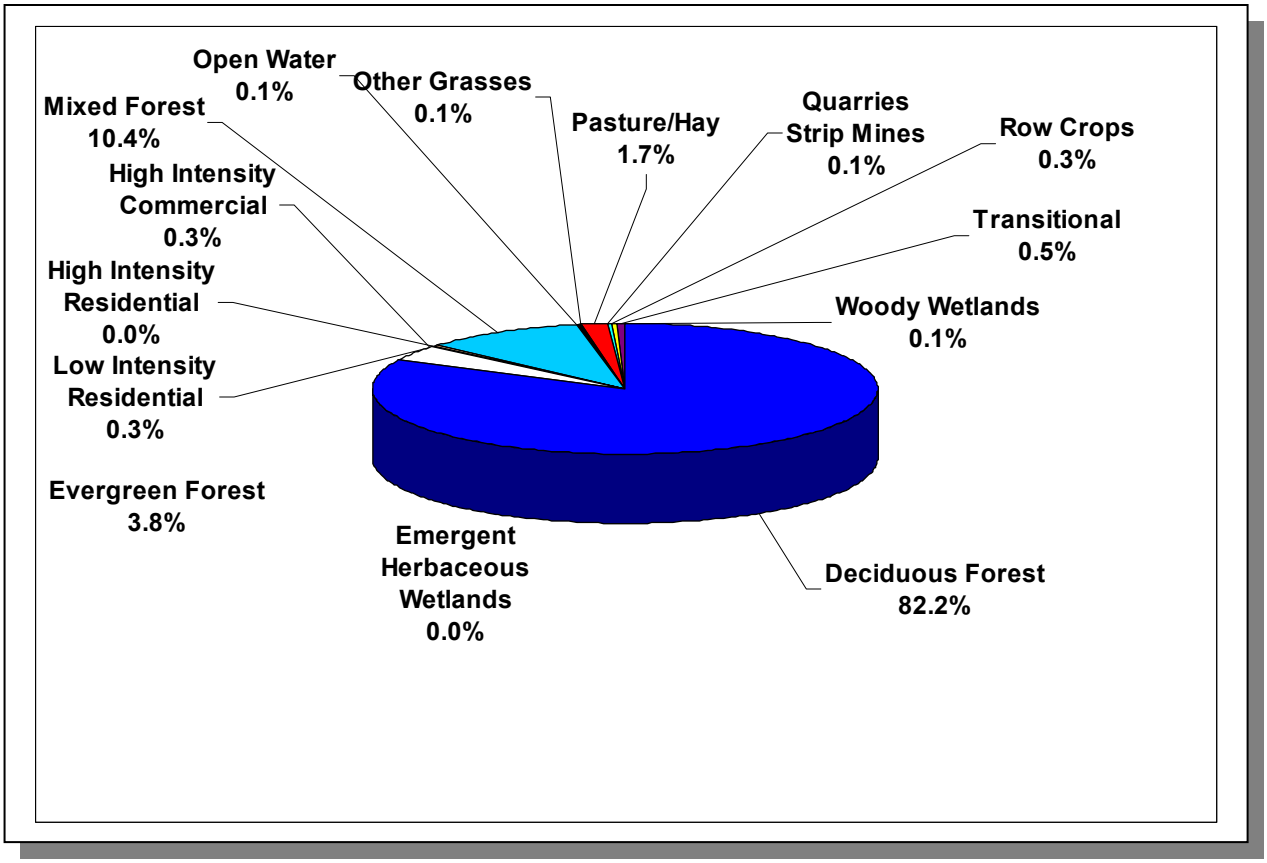

Figure 2-7. Land Use Distribution in the Tennessee Portion of the Clear Fork of the Cumberland River Watershed. *More information is provided in Appendix II.*

Sinkholes, springs, disappearing streams and caves characterize karst topography. The term "karst" describes a distinctive landform that indicates dissolution of underlying soluble rocks by surface water or ground water. Although commonly associated with limestone and dolomite (carbonate rocks), other highly soluble rocks such as gypsum and rock salt can be sculpted into karst terrain. In karst areas, the ground water flows through solution-enlarged channels, bedding planes and microfractures within the rock. The characteristic landforms of karst regions are: closed depressions of various size and arrangement; disrupted surface drainage; and caves and underground drainage systems. The term "karst" is named after a famous region in the former country of Yugoslavia.

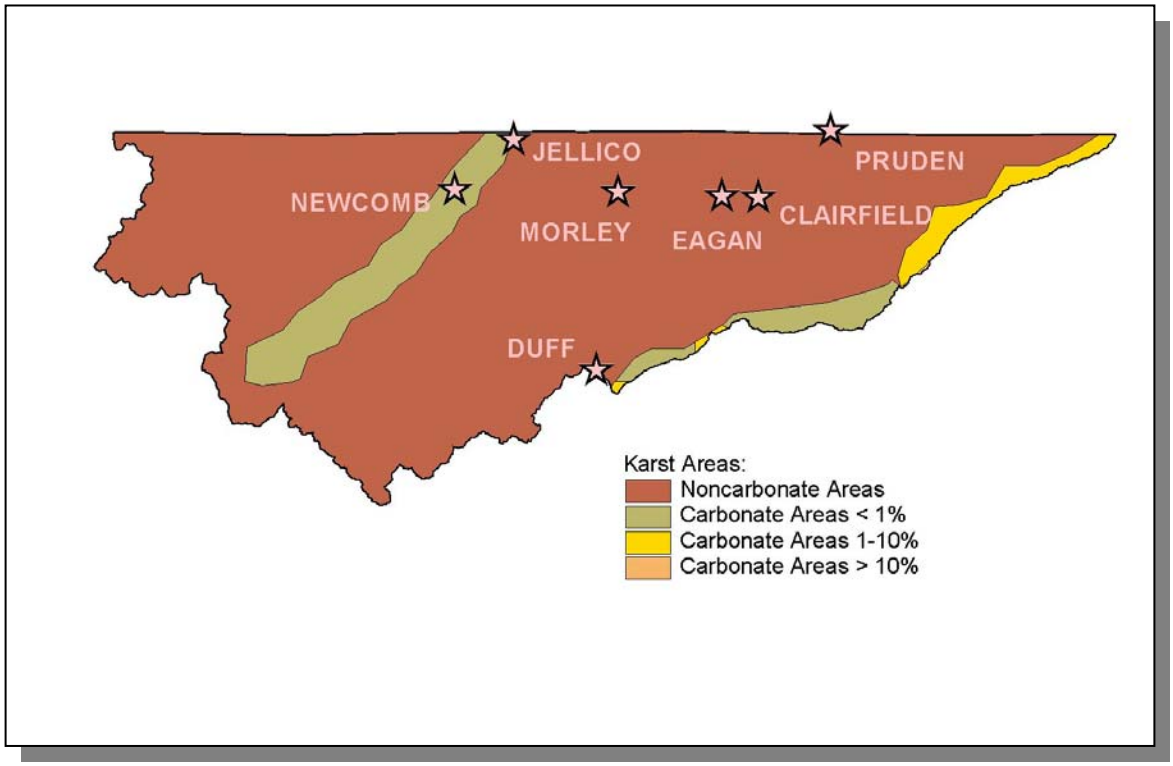

Figure 2-8. Illustration of Karst Areas in the Tennessee Portion of the Clear Fork of the Cumberland River Watershed. *Locations of communities in the watershed are shown for reference.*

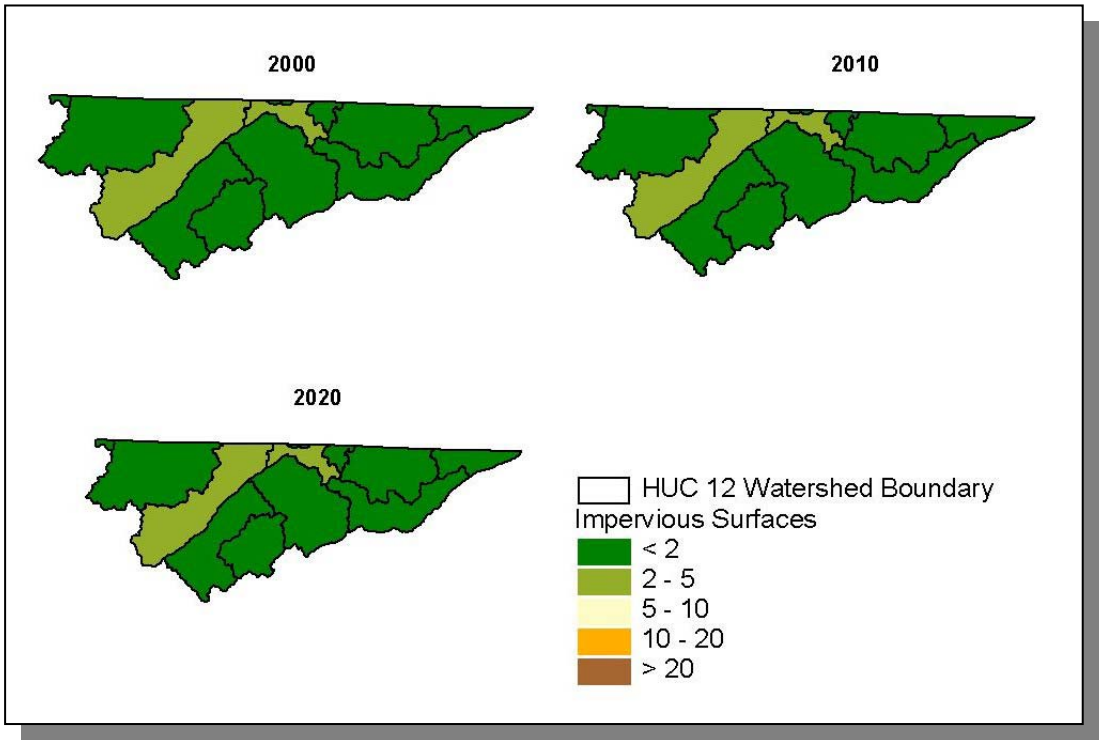

Figure 2-9. Illustration of Total Impervious Area in the Tennessee Portion of the Clear Fork of the Cumberland River Watershed. *All HUC-12 subwatersheds are shown. Current and projected total impervious cover is provided by EPA Region 4. More information can be found at: http://www.epa.gov/ATHENS/research/impervious/*

2.5. ECOREGIONS AND REFERENCE STREAMS. Ecoregions are relatively homogeneous areas of similar geography, topography, climate and soils that support similar plant and animal life. Ecoregions serve as a spatial framework for the assessment, management, and monitoring of ecosystems and ecosystem components. Ecoregion studies can aid the selection of regional stream reference sites, identifying high quality waters, and developing ecoregion-specific chemical and biological water quality criteria.

There are eight Level III Ecoregions and twenty-five Level IV subecoregions in Tennessee. The Tennessee portion of the Clear Fork of The Cumberland River Watershed lies within 2 Level III ecoregions (Southwestern Appalachians and Central Appalachians) and contains 2 Level IV subecoregions:

- The **Cumberland Plateau (68a)** tablelands and open low mountains are about 1000 feet higher than to the west, and receive slightly more precipitation with cooler annual temperatures than the surrounding lower-elevation ecoregions. The plateau surface is less dissected with lower relief compared to the Cumberland Mountains or the Plateau Escarpment (68c). Elevations are generally 1200-2000 feet, with the Crab Orchard Mountains reaching over 3000 feet. Pennsylvania-age conglomerate, sandstone, siltstone, and shale is covered by mostly well-drained, acidic soils of low fertility. The region is forested, with some agriculture and coal mining activities.

- The **Cumberland Mountains (69d)**, in contrast to the sandstone-dominated Cumberland Plateau (68a) to the west and southwest, are more highly dissected, with narrow-crested steep slopes, and younger Pennsylvanian-age shales, sandstones, siltstones, and coal. Narrow, winding valleys separate the mountain ridges, and relief is often 2000 feet. Cross Mountain, west of Lake City, reaches 3534 feet in elevation. Soils are generally well-drained, loamy, and acidic, with low fertility. The natural vegetation is a mixed mesophytic forest, although composition and abundance vary greatly depending on aspect, slope position, and degree of shading from adjacent land masses. Large tracts of land are owned by lumber and coal companies, and there are many areas of stripmining.

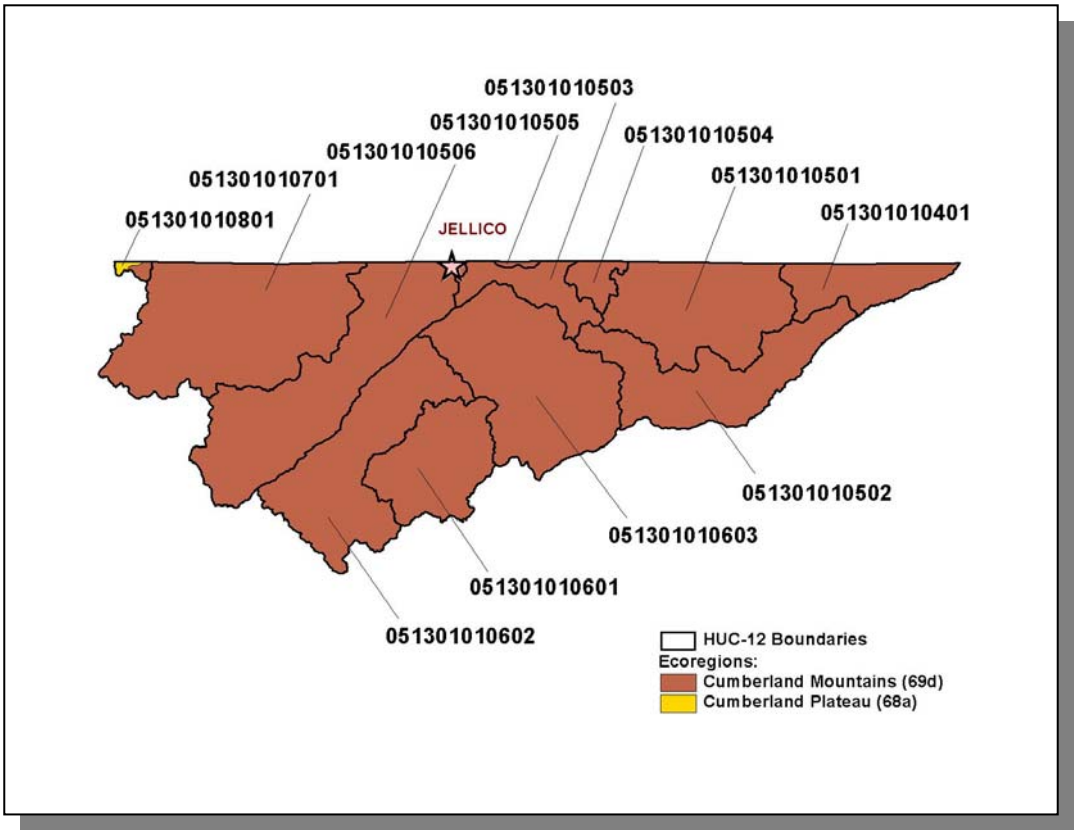

Figure 2-10. Level IV Ecoregions in the Tennessee Portion of the Clear Fork of the Cumberland River Watershed. *Location of Jellico is shown for reference.*

Each Level IV Ecoregion has at least one reference stream associated with it. A reference stream represents a least impacted condition and may not be representative of a pristine condition.

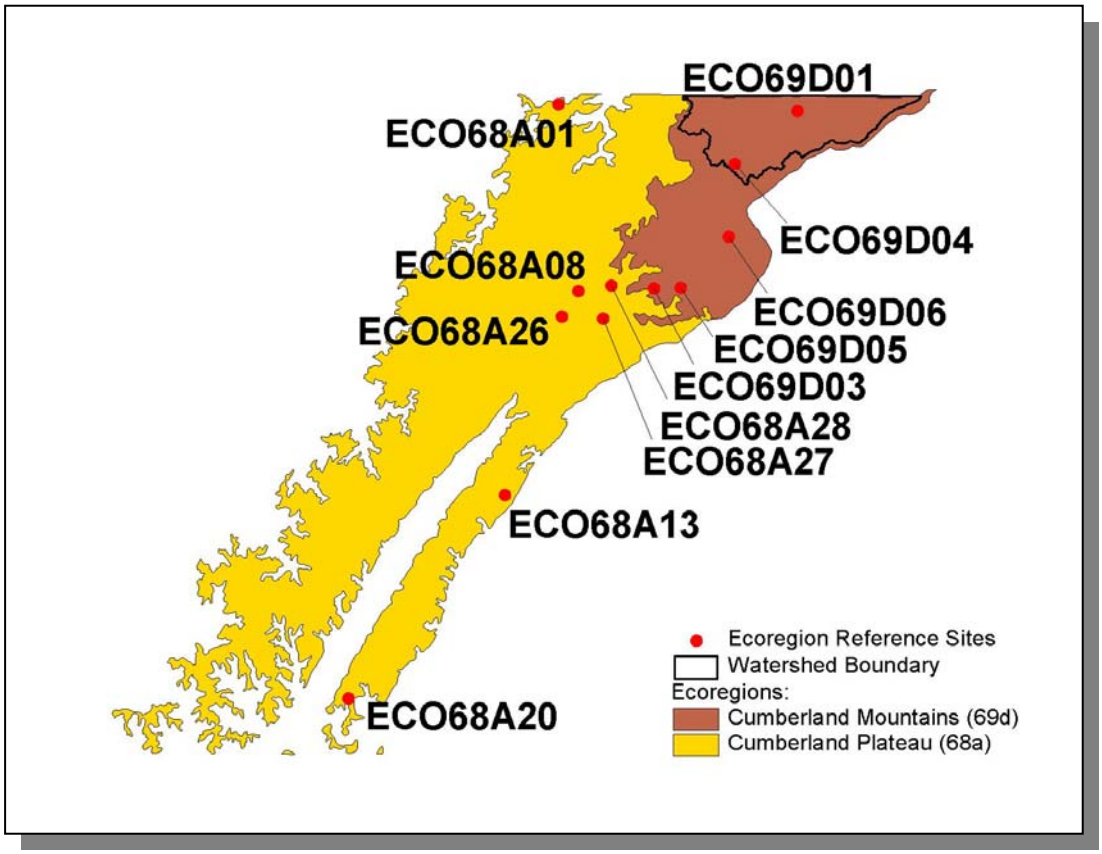

Figure 2-11. Ecoregion Monitoring Sites in Level IV Ecoregions 68a and 69d. *The Tennesse portion of the Clear Fork of the Cumberland River Watershed is shown for reference. More information, including which ecoregion reference sites were inactive or dropped prior to 01/01/2006, is provided in Appendix II.*

2.6. NATURAL RESOURCES.

2.6.A. Rare Plants and Animals. The Heritage Program in the TDEC Division of Natural Heritage maintains a database of rare species that is shared by partners at The Nature Conservancy, Tennessee Wildlife Resources Agency, the US Fish and Wildlife Service, and the Tennessee Valley Authority. The information is used to: 1) track the occurrence of rare species in order to accomplish the goals of site conservation planning and protection of biological diversity, 2) identify the need for, and status of, recovery plans, and 3) conduct environmental reviews in compliance with the federal Endangered Species Act.

GROUPING	NUMBER OF RARE SPECIES
Insects	1
Amphibians	3
Birds	3
Fish	6
Mammals	9
Plants	12
Total	**34**

Table 2-3. There are 34 Known Rare Plant and Animal Species in the Tennessee Portion of the Clear Fork of the Cumberland River Watershed.

In the Tennessee portion of the Clear Fork of the Cumberland River Watershed, there are seven known rare fish species.

SCIENTIFIC NAME	COMMON NAME	FEDERAL STATUS	STATE STATUS
Etheostoma baileyi	Emerald darter		D
Etheostoma sagitta	Arrow darter		D
Etheostoma susanae	Cumberland Johnny darter		E
Notropis buccatus	Silverjaw minnow		T
Notropis rubellus rubellus	Rosyface shiner		D
Phoxinus cumberlandensis	Blackside dace		T

Table 2-4. Rare Aquatic Species in the Tennessee Portion of the Clear Fork of the Cumberland River Watershed. *State Status: T, Listed Threatened by the U.S. Fish and Wildlife Service; E, Listed Endangered by the Tennessee Wildlife Resources Agency; D, Deemed in Need of Management by the Tennessee Wildlife Resources Agency. More information may be found at http://www.state.tn.us/environment/na/.*

2.6.B. Wetlands. The Division of Natural Heritage maintains a database of wetland records in Tennessee. These records are a compilation of field data from wetland sites inventoried by various state and federal agencies. Maintaining this database is part of Tennessee's Wetland Strategy, which is described at:

http://www.state.tn.us/environment/nh/wetlands/

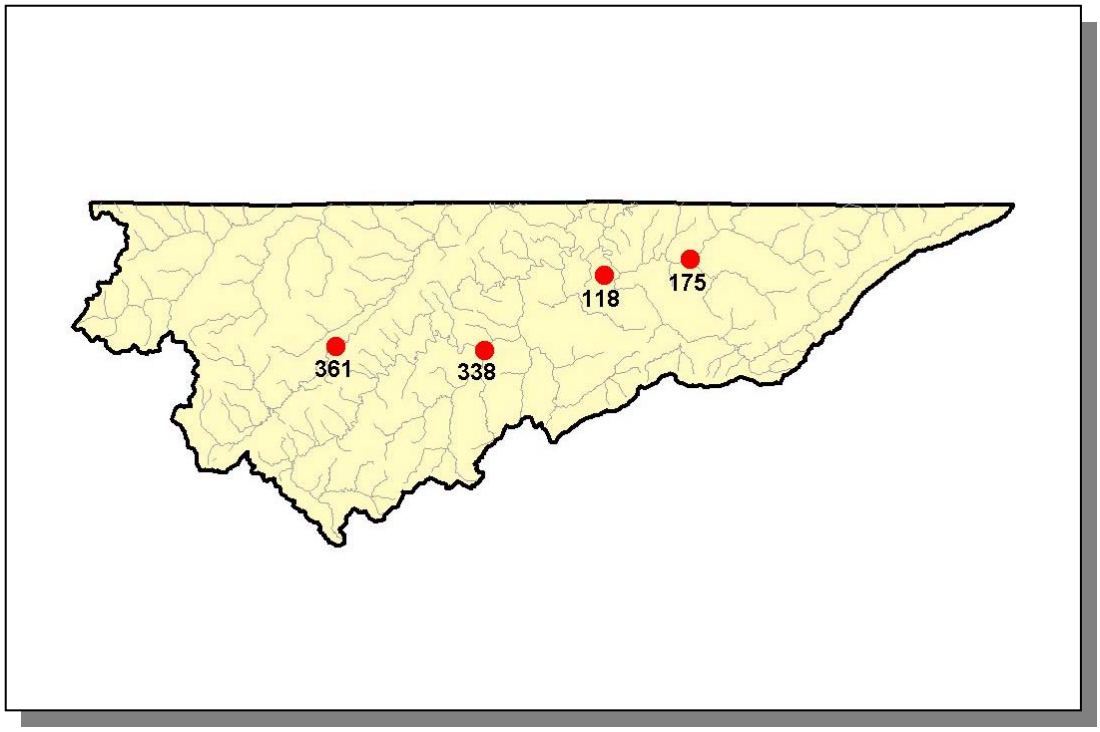

Figure 2-12. Location of Wetland Sites in TDEC Division of Natural Heritage Database in the Tennessee Portion of the Clear Fork of the Cumberland River Watershed. This map represents an incomplete inventory and should not be considered a dependable indicator of the presence of wetlands. *There may be additional wetland sites in the watershed. More information is provided in Appendix II.*

2.7. CULTURAL RESOURCES.

2.7.A. Nationwide Rivers Inventory. The Nationwide Rivers Inventory, required under the Federal Wild and Scenic Rivers Act of 1968, is a listing of free-flowing rivers that are believed to possess one or more outstanding natural or cultural values. Exceptional scenery, fishing or boating, unusual geologic formations, rare plant and animal life, cultural or historic artifacts that are judged to be of more than local or regional significance are the values that qualify a river segment for listing. The Tennessee Department of Environment and Conservation and the Rivers and Trails Conservation Assistance branch of the National Park Service jointly compile the Nationwide Rivers Inventory from time to time (most recently in 1997). Under a 1980 directive from the President's Council on Environmental Quality, all Federal agencies must seek to avoid or mitigate actions that would have an adverse effect on Nationwide Rivers Inventory segments.

The most recent version of the Nationwide Rivers Inventory lists portions of one stream in the Tennessee portion of the Clear Fork of the Cumberland River Watershed:

> Stinking Creek (RM 0 to RM 29) is a rural scenic stream that flows through the unique Cumberland Black geologic formation.

RIVER	SCENIC	RECREATION	GEOLOGIC	FISH	WILDLIFE
Stinking Creek	X	X	X		

Table 2-5. Attributes of Streams Listed in the Nationwide Rivers Inventory.

Additional information may be found online at http://www.ncrc.nps.gov/rtca/nri/

2.7.B. Public Lands. Some sites representative of the cultural heritage are under state or federal protection:

- Indian Mountain Campground State Recreation Area is a multi-use facility in Campbell County. The 200-acre park is built on reclaimed strip mines. More information may be found at: http://www.state.tn.us/environment/parks/parks/IndianMtn

- Royal Blue Wildlife Management Area is part of a 50,000-acre wilderness. More information my be found at: http://www.cs.utk.edu/~dunigan/mtnbike/royal.html

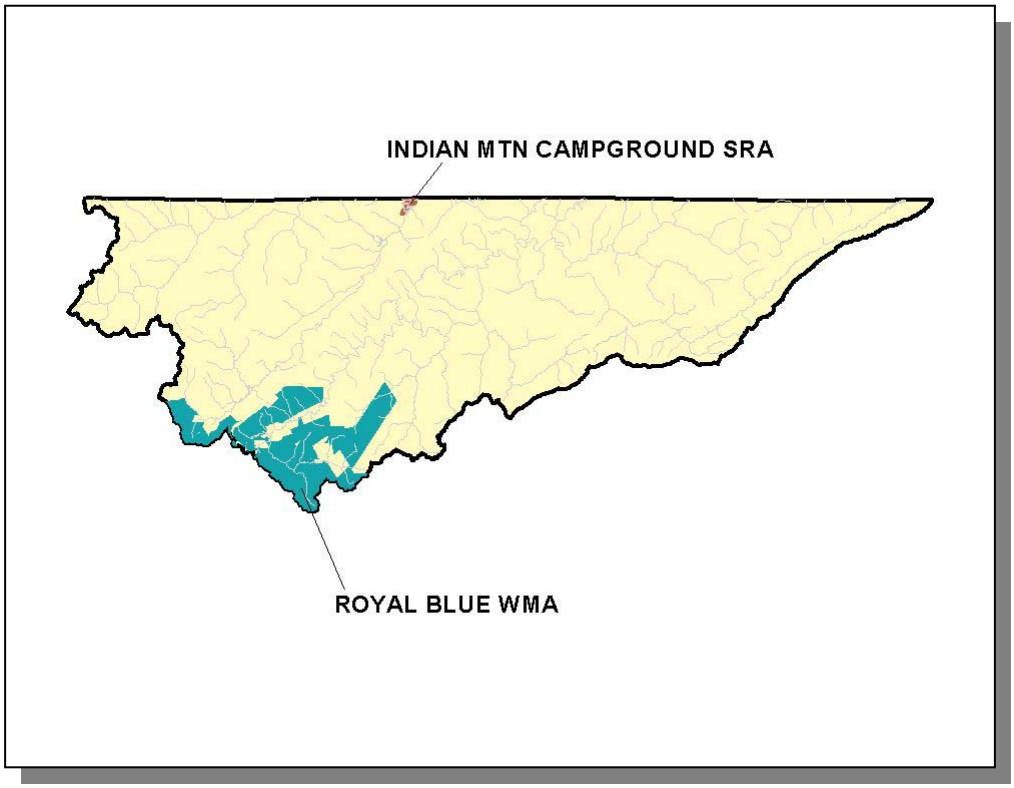

Figure 2-13. Public Lands in the Tennessee Portion of the Clear Fork of the Cumberland River Watershed. *Data are from Tennessee Wildlife Resources Agency. SRA, State Recreation Area; WMA, Wildlife Management Area.*

2.8. TENNESSEE RIVERS ASSESSMENT PROJECT. The Tennessee Rivers Assessment is part of a national program operating under the guidance of the National Park Service's Rivers and Trails Conservation Assistance Program. The Assessment is an inventory of river resources, and should not be confused with "Assessment" as defined by the Environmental Protection Agency. A more complete description can be found in the Tennessee Rivers Assessment Summary Report, which is available from the Department of Environment and Conservation and on the web at:

http://www.state.tn.us/environment/wpc/publications/riv/

STREAM	NSQ	RB	RF	STREAM	NSQ	RB	RF
Capuchin Creek	1			Laural Fork Creek	1		2
Clear Fork Creek	1,2	3	2,4	Little Elk Creek	3		
Davis Creek	3			Louse Creek	1		
Elk Fork Creek	3		2	Stinking Creek	3		1
Hickory Creek	2,3			Tackett Creek	1		3
Jellico Creek	2						

Table 2-6. Stream Scoring from the Tennessee Rivers Assessment Project.

Categories: NSQ, Natural and Scenic Qualities
RB, Recreational Boating
RF, Recreational Fishing

Scores: 1. Statewide or greater Significance; Excellent Fishery
2. Regional Significance; Good Fishery
3. Local Significance; Fair Fishery
4. Not a significant Resource; Not Assessed